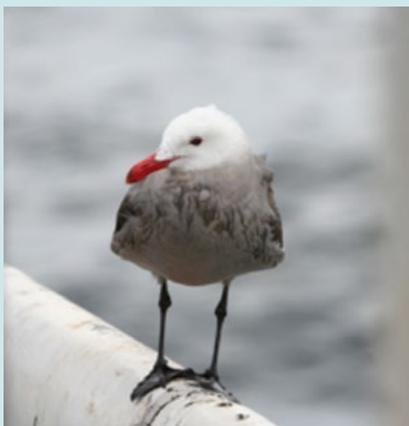


# NOAA FISHERIES

## 2016 Accomplishments

Policy and Management	2
Research and Fieldwork	4
Presentations and Meetings	5
Publications	7
National Seabird Program	
Funded Projects	8
Other Accomplishments	12
2016 NSP Team	12



Heermann's Gull. Photo credit: Jeannette Zamon

# National Seabird Program 2016 Annual Report

'NOAA Fisheries' National Seabird Program (NSP) is a crosscutting group of 'managers and scientists who work domestically and internationally to protect and conserve seabirds. Our activities are guided by statutes (The National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries, Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds," the Migratory Bird Treaty Act, Magnuson-Stevens Reauthorization Act, Endangered Species Act, National Environmental Policy Act, Oil Pollution Act), and emerging agency priorities (e.g., [Ecosystem-Based Fishery Management Policy and Road Map](#), [The National Marine Fisheries Service Climate Science Strategy](#), [Annual Guidance Memoranda](#)). Together, these form the basis for NSP's two overarching goals:

- 1) Mitigate bycatch – NOAA Fisheries is directly responsible for mitigating bycatch in U.S. fisheries, and supports a variety of international agreements and Regional Fisheries Management Organizations to mitigate bycatch associated with non-U.S. fisheries.
- 2) Promote seabirds as ecosystem indicators – Seabirds are excellent indicators of ecosystem status. As highly migratory, near-apex predators, they integrate across trophic levels, space, and time, and are easily studied relative to other marine species.

The NSP works through representation on steering committees and working groups within and external to NOAA Fisheries, and through partnerships with other NOAA Line Offices, Fisheries Management Councils (FMC), the States, and other Federal agencies (e.g., U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Department of State). The NSP is housed in the Office of Science and Technology, which provides funding for the Chair position and NSP projects. Our members work in all five NOAA Fisheries Regional Offices, six Science Centers, and Headquarters Offices of Protected Resources, Science and Technology, International Affairs, Sustainable Fisheries, Habitat Conservation, General Counsel, and NOAA's National Ocean Service. As such, we are a nationally coordinated program that benefits from significant leveraging at the regional level.

This report summarizes the significant activities and accomplishments of the NSP during 2016. For more information, visit our website:

<http://www.st.nmfs.noaa.gov/national-seabird-program/>

### Alaska Fisheries Science Center

Seabird Bycatch Assessment, 2016 –  
*Presented to the North Pacific Fisheries  
Management Council.*

Stephani Zador

### Alaska Regional Office

Seabird Bycatch Mitigation using  
Streamer Lines – *Existing information  
handouts revised and printed on synthetic  
(plastic) paper, and new streamer lines  
procured and distributed throughout  
Alaska (see NSP Funded Projects).*

Seabird Bycatch Report – *Summary of  
seabird bycatch from 2007 through 2015  
(see Publications).*

NMFS Alaska Groundfish and Halibut  
Seabird Working Group – *Formed in  
compliance with the 2015 Biological  
Opinion on effects of the Gulf of Alaska  
and Bering Sea/Aleutian Islands  
Groundfish Fisheries on Short-tailed  
Albatross. Coordinated with the U.S.  
Fish and Wildlife Service (USFWS).*

Anne Marie Eich

Kristin Mabry

Sadie Wright

Shannon Fitzgerald (AFSC)

### Northwest Fisheries Science Center

Short-tailed Albatross Bycatch  
Assessment in the West Coast  
Groundfish (Longline) Fishery – *To form  
the basis of a biological assessment  
under a re-initiation of a biological  
opinion with USFWS.*

Short-tailed Albatross Bycatch Risk  
Assessment from the West Coast  
Groundfish Fishery – *As part of the re-  
initiation of a Biological Opinion.*

Draft Avian Predation Section: 2018  
Federal Columbia River Power System  
(FCRPS) Biological Opinion – *With  
special focus on incorporating peer-  
reviewed seabird data into 2018  
Biological Opinion.*

Third Wire Interactions of Seabirds in the  
Whiting Fishery – *Research in  
collaboration with Washington SeaGrant.*

Use of Seabird Avoidance Gear on  
Longline Vessels – *Observer data  
collection protocols to characterize use  
of required gear.*

Seabird Bycatch Report – *Prepared  
draft; final report due 2017.*

Tom Good

Jon McVeigh

Ryan Shama

Jeannette Zamon

### Office of Habitat Conservation

Seabird Bycatch Observer Training –  
*Observer forms reviewed/revise;  
general training recommendations  
updated; target: Southeast Fisheries  
Science Center.*

Jeff Shenot

### Office of International Affairs and Seafood Inspection

Seabird Bycatch Mitigation in the IATTC  
Regional Fishery Management  
Organization – *Ongoing work with the U.  
S. delegation to the Inter-American  
Tropical Tuna Commission (IATTC),  
Agreement on the Conservation of  
Albatrosses and Petrels (ACAP), and  
BirdLife International to update seabird  
bycatch measures.*

Mi Ae Kim (IASI)

Lisa T. Ballance (SWFSC)

### Office of Science and Technology

National Bycatch Report – *Updates  
incorporated for fisheries in Alaska,  
Pacific Islands, and West Coast regions;  
subset of fish and protected species ("key  
stocks" including 12 seabird  
populations) targeted for monitoring.*

Lee Benaka



Streamer lines keeping birds at bay while fishing gear is hauled back. Photo credit: Ed Melvin, Washington Sea Grant

### **Pacific Islands Regional Office**

Seabird Handling Guidance and Kits for Longline Fishers – (See NSP Funded Projects.)

Investigating Increased Black-footed Albatross Bycatch in Deep-Set Fishery: 2015-2016 – *Work planned for summer 2017 with Hollings scholar.*

Melanie Brown  
Sarah Ellgen  
John Peschon  
Rob O'Conner

### **Southeast Fisheries Science Center**

Estimated seabird bycatch in the U.S. Atlantic pelagic longline fishery during 1992-2014 based on observer and logbook data – *Report completed.*

Joan Browder

### **West Coast Regional Office**

Forage Fish Final Rule (81 FR 19054) Published – *Prohibits the future development of fisheries for unfished forage fish occurring off the U.S. West Coast. The forage fish and squid species addressed under this rule are known prey of seabird species (including Procellariiformes, Pelecaniformes, and Charadriiformes).*

Marbled Murrelet Bycatch Mitigation Meetings – *A series of technical meetings with USFWS, Bureau of Indian Affairs (BIA), Puget Sound Tribes, Northwest Indian Fisheries Commission, and Washington Department of Fish and Wildlife to discuss modeling approaches to quantify Marbled Murrelet encounter rates in Puget Sound salmon gillnet fisheries, September – December 2016.*

*Consultation scheduled for completion February 2017.*

Marbled Murrelet Biological Opinion concerning Puget Sound Salmon Gillnet Fishery – *In preparation; coordination between Federal Agencies (NOAA, BIA, and USFWS) and Co-managers (Puget Sound Indian Tribes, Northwest Indian Fisheries Commission, and Washington Department of Fish and Wildlife).*

Yvonne de Reynier  
Amilee Wilson



Black-footed Albatross. Photo credit: Robert Pitman

### Alaska Fisheries Science Center

Fisheries Observer Training – *To include sampling of bycaught seabirds; collaboration with the University of Washington COASST (Coastal Observation and Seabird Survey Team) Program.* (See NSP Funded Projects.)

Seabird Food Habits and Necropsy – *Research based on bycaught seabirds; including database construction and maintenance.* (See NSP Funded Projects.)

Quantifying Seabird Mortality on Trawl Vessels – *Ongoing.*

Alaska Seabird Population Trends – *Ongoing.*

Shannon Fitzgerald  
Stephani Zador

### Northwest Fisheries Science Center

Extent and Causes of Rhinoceros Auklet Mortality in Puget Sound and Outer Washington Coast – *Research on a summer wreck of Rhinoceros Auklets; necropsies showed emaciation and pneumonia.*

Seabird Survey aboard Ocean Salmon Ecology Mission – *Cape Flattery, WA to Newport, OR, 21-30 June 2016.*

At-Sea Distributional Shifts in Cassin's Auklet pre- and post 2014/15 Winter Mass Mortality Event in the California Current Ecosystem – *Ongoing; including graduate student participation.* (See NSP Funded Projects.)

Seabird Interactions with Third Wire, Special Focus on Albatrosses – *Ongoing; data collected from observers at sea; analysis scheduled for fall 2017/winter 2018; research scope may include additional personnel and tests of mitigation measures.*

Tom Good  
Jon McVeigh  
Jeannette Zamon

### Southwest Fisheries Science Center

Seabird Survey aboard Hawaiian Islands Cetacean & Ecosystem Assessment Survey (HICEAS) – *planned for 2017; two ship, 187 days at sea survey the Hawaiian Archipelago (US EEZ, Hawaii – Kure).*

Seabird Survey aboard California Current Cetacean & Ecosystem Assessment Survey (CalCurCEAS) – *planned for 2018; four-month survey of the California Current (US-Canada border to Baja California, Mexico and seaward to 300 nautical miles).*

Lisa T. Ballance  
Annette Henry



Arctic Tern. Photo credit: Peter Pyle



Rhinoceros Auklets with sandlance. Photo credit: Verena Gill, U.S. Geological Society

### Pacific Seabird Group Annual Meeting, Turtle Bay, Hawaii, February 2016

- *The life aquatic – Reflections on the at-sea lives of seabirds in the eastern tropical Pacific Ocean*; Lisa T. Ballance – Plenary Speaker
- *Estimating abundance and trends of procellariiform seabirds using Bayesian hierarchical state-space models and at-sea data*; Trevor Joyce – Best Student Presentation
- *From Observers to Necropsy: Collaborating to Document the Demography of the North Pacific Groundfish Fishery Bycatch*; Shannon Fitzgerald, Jessie Beck, Hannah Nevins, and Michelle Hester
- *Modeling Seabird Distributions To Inform Washington's Marine Spatial Plan* – Jeffery Leirness, Charles Menza, Timothy White, Arliss J. Winship, Brian P. Kinlan, John Pierce, Scott Pearson, Jeannette E. Zamon, Josh Adams, Karin Forney, Elizabeth Becker, David M. Pereksta, Liam Antrim, Lisa T. Ballance
- *Developing Quantitative Measures Of Risk Using Spatial And Temporal Overlap In Marine Data Sets From Nearshore Oregon And Washington – An Ecological Example With Seabirds And Salmon* – Jeannette E. Zamon, Brian Burke, Mary Hunsicker, David Teel, Elizabeth M. Phillips

### NMFS' Alaska Groundfish and Halibut Seabird Working Group, March 2016

- Mandated by recent biological opinion. Terms of Reference and focused topics under development. Anne Marie Eich, Shannon Fitzgerald

### Alaska Seabird Sensitivity to Forage Fish and Climate Change Workshop, Port Townsend, WA, April 2016

- Funded by the Aleutian and Bering Sea Islands Landscape Conservation Cooperative, ABSI-LCC. Stephani Zador

### 9th Advisory Committee (AC9) meeting of the Agreement on the Conservation of Albatrosses and Petrels (ACAP), La Serena, Chile, May 2016

- Topics included electronic monitoring, updating of bycatch mitigation advice, and guidance for census of burrowing petrels and sampling the tissue of dead birds. Mi Ae Kim, Sarah Ellgen, Lisa T. Ballance, Shannon Fitzgerald, Anne Marie Eich, Tom Graham, John Peschon, Jeannette Zamon

### Columbia River Estuary Conference, Astoria, OR, May 2016

- [\*Ocean avian predation risk and early marine survival of salmon in the Columbia River Plume\*](#); Jeannette Zamon

### Inter-American Tropical Tuna Commission Science Advisory Committee Meeting, La Jolla, CA, May 2016

- *Update on seabird distribution in the eastern Pacific and best practice advice to reduce bycatch of seabirds in the convention area*; E. Frere, Lisa T. Ballance, Trevor Joyce, M. Favero



Wedge-tailed Shearwater. Photo credit: Robert L. Pitman

### Pacific Whiting (Hake) Industry Meeting, Seattle, WA, May 2016

- With a focus on Third Wire research. Jon McVeigh

### Inter-American Tropical Tuna Commission Annual Meeting, La Jolla, CA, 27 June –1 July 2016

- *Seabird vulnerabilities to bycatch from longline fisheries in the eastern Pacific Ocean*; E. Frere, M. Favero, Mi Ae Kim, K. Rusello, Lisa T. Ballance

### 4th International Marine Conservation Congress, St. John's, Newfoundland, Canada, July 2016

- *Seabirds in the California Current: risk assessment, sensitivity, and conservation* in [Symposium on Seabird Conservation Planning: Distribution Modeling, Risk Assessment, and Effective Conservation Actions](#); Tom Good

## Presentations and Meetings

4th International Marine Conservation Congress, St. John's, Newfoundland, Canada, July 2016

- *Seabirds in the California Current: risk assessment, sensitivity, and conservation* in [Symposium on Seabird Conservation Planning: Distribution Modeling, Risk Assessment, and Effective Conservation Actions](#); Tom Good

North Pacific Fisheries Management Council Electronic Monitoring Working Group Meeting, Alaska, July 2016

- Focus on integrating electronic monitoring tools into the Observer Program for the fixed gear groundfish and halibut fisheries; the Working Group's subgroup also discussed the issues; Shannon Fitzgerald, Anne Marie Eich

NWFSC Ecosystem Science Program Review, Seattle, WA, July 2016

- *Marine bird and mammal research supporting EBM at the NWFSC*; Tom Good, Jeannette Zamon

North American Ornithological Conference, Washington, D. C., August 2016

- [NOAA Fisheries' National Seabird Program: Supporting Seabird Science and Management](#); Lisa T. Ballance, Mi Ae Kim, Annette E. Henry, Anne Marie Eich, Sarah Ellgen, Shannon Fitzgerald, Kristin Mabry, Amilee Wilson, Sadie Wright, Stephani Zador

6th International Albatross and Petrel Conference, Barcelona, Spain, September 2016

- [Performance and challenges of electronic monitoring for fisheries monitoring and seabird bycatch](#); Shannon Fitzgerald
- [Seabird bycatch monitoring, conservation achievements and ongoing work in North Pacific groundfish fisheries](#); Shannon Fitzgerald

BirdLife International Meeting, Honolulu, Hawaii, September 2016

- Focus on new ACAP best practices for line weighting and hook-shielding devices. (ACAP line weighting practices differ slightly from those required by US Fisheries. NMFS would work with the Western Pacific Fishery Management Council on any proposed modifications that, if adopted, would require regulation changes.) Tom Graham, Sarah Ellgen, Melanie Brown

IUCN World Conservation Congress, Honolulu, HI, September 2016

- [Seabirds at the crossroads](#); Lisa T. Ballance et al. (including Summer Martin, Eileen Sobeck)

PICES, San Diego, CA, November 2016

- [Forecasting the flock: Using species distribution models to evaluate the effects of climate change on future seabird foraging aggregations in the California Current System](#); D. Dick et al. incl. Jeannette E. Zamon, Lisa T. Ballance – PICES Biological Oceanography (BIO) Committee Early Career Scientist Best Oral Presentation

Council for Conservation of Migratory Birds Staff meeting, Washington D.C., 2016 (quarterly)

- Focus on preparations for Annual Council meeting, changing CCMB Annual Report to electronic format, Programmatic Environmental Impact Statement; Lee Benaka, Annette Henry



Mottled Petrel. Photo credit: NOAA Fisheries

**Published** (NSP team member in bold)

**Boyd, C.**, Grünbaum, D., Hunt, G. L., Punt, A. E., Weimerskirch, H., and Bertrand, S. 2016. [Effectiveness of social information used by seabirds searching for unpredictable and ephemeral prey](#). Behavioral Ecology, 27:1223-1234.

**Boyd, C.**, Grünbaum, D., Hunt, G. L., Punt, A. E., Weimerskirch, H., & Bertrand, S. 2016. [Effects of variation in the abundance and distribution of prey on the foraging success of central place foragers](#). Journal of Applied Ecology doi:10.1111/1365-2664.12832.

Denit, Kelly, **Sarah Ellgen**, **Shannon Fitzgerald**, **Mi Ae Kim**, and Chris Rilling. 2016 [Electronic monitoring in fisheries of the United States](#). Information paper for ACAP Seabird Bycatch Working Group meeting in La Serena, Chile (May 2-3).

**Eich, A. M.**, **K. R. Mabry**, **S. K. Wright**, and **S. M. Fitzgerald**. 2016. [Seabird Bycatch and Mitigation Efforts in Alaska Fisheries Summary Report: 2007 through 2015](#). U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/AKR-12, 47p. (reviewed by **Stephani Zador**).

Gilman, E., M. Chaloupka, **J. Peschon**, and **S. Ellgen**. 2016. [Risk Factors for Seabird Bycatch in a Pelagic Longline Tuna Fishery](#). PloS one, 11(5), e0155477. For the Hawaii deep-set longline fishery, Gilman et al analyzed the effectiveness of seabird mitigation methods and seabird interactions in relation to ocean productivity indices.

Li, Y., Y. Jiao, and **J. A. Browder**. 2016. [Modeling spatially-varying ecological relationships using geographically weighted generalized linear model: a simulation study based on longline seabird bycatch](#). Fisheries Research 181:14-24.

**Martin, S. L.**, **L. T. Ballance**, and T. Grooves. 2016. [An ecosystem services perspective for the oceanic eastern tropical Pacific: commercial fisheries, carbon storage, recreational fishing, and biodiversity](#). Frontiers in Marine Science doi: 10.3389/fmars.2016.00050.

Menza, C., J. Leirness, T. White, A. Winship, B. Kinlan, L. Kracker, **J. E. Zamon**, **L. Ballance**, E. Becker, K. Forney, J. Barlow, J. Adams, D. Pereksta, S. Pearson, J. Pierce, S. Jeffries, J. Laake, J. Calambokidis, A. Douglas, B. Hanson, S. Benson, J. J. Scordino, L. Antrim, and N. Wright. 2016. [Predicted Distribution Maps of Seabirds, Pinnipeds, and Cetaceans off the Pacific Coast of Washington](#). NOAA Technical Memorandum NOS NCCOS 210. Silver Spring, MD. 96 pp.

**In Press**

Li, Y., Y. Jiao, and **J. A. Browder**. *In press*. Assessment of seabird bycatch in the U.S. Atlantic longline fishery, with an extra exploration of the effect of spatial nonstationarity. ICES Journal of Marine Science.

Phillips, E. M., J. K. Horne, and **J. E. Zamon**. *In press*. Predator-prey interactions influenced by a dynamic river plume. Canadian Journal of Fisheries and Aquatic Sciences.

**Submitted**

Schmitt, L., R. Bettinger, J. Ziker, F. Riede, H. Glørstad, L. Åstveit, and **J. E. Zamon**. *Submitted*. 'Gone fishin': a niche that changed North Central Europe and led to the coastal colonization of western Sweden and southern Norway during the Pleistocene/Holocene transition." Arctic Anthropology.

**Zamon, J. E.**, S. A. Hinton, P. J. Bentley, and O. Langness. *Submitted*. Addressing life-history knowledge gaps for threatened Eulachon in the lower Columbia River. Northwest Science.

Zhou, Can, Yan Jiao, and **Joan Browder**. *Submitted*. K-aggregated transformation of discrete distributions for modeling count data with excess ones: seabird bycatch in the US Atlantic pelagic longline fishery as an example. This paper, which includes estimation of the annual seabird bycatch of the fleet from 1992 through 2014, is the first step in developing a new Bayesian approach to estimating the species specific seabird bycatch of the fleet.

**Manuscripts in Preparation**

**Benaka, Lee**, et al., National Bycatch Report update due 2017.

Modeling seabird bycatch in the Atlantic pelagic longline fishery: coping with excess ones and zeros. *In prep.* (**Joan Browder**).

**S. Fitzgerald**, Dietrich, and Wicklund. *In Prep*. Seabird Bycatch in Alaska Trawl Fisheries – A comparison of Observer sampling protocols.

**Good, T. P.**, L. Weitkamp, P. Bentley, D. E. Lyons, and D. D. Roby. *In Prep*. Comparing piscivores diets and prey availability: insights into avian predation on the Columbia River estuary fish community.

Night-setting as bycatch mitigation in West Coast longline fisheries. *In prep.* (**Tom Good**).

Alaska seabird population trend analysis. *In prep.* (**Stephani Zador**).

**Zamon, J. E.**, B. J. Burke, M. Hunsicker, E. M. Phillips, and D. J. Teel. *In prep*. Spatial and temporal variation in ocean avian predation risk to Columbia River Chinook salmon.

## National Seabird Program Funded Projects

Funding for these projects was provided by the Office of Science and Technology's National Observer Program.

### Estimating and Understanding Seabird Bycatch of U.S. Atlantic Pelagic Longline Fleet

Joan A. Browder, Southeast Fisheries Science Center, Protected Resources and Biodiversity Division; Yan Jiao, Department of Fish and Wildlife Conservation, Virginia Polytech, Blacksburg, VA 24061

Seabirds are among the many oceanic pelagic species captured incidentally in the U.S. Western Atlantic pelagic longline fishery. Mandatory logbook reporting became a permit requirement in this fishery in 1986. A Pelagic Observer Program (POP) has been collecting bycatch data by randomly sampling fleet effort since 2004. Although seabird bycatch was recorded, lack of identification skills resulted in most seabirds caught before 2004 being recorded as simply “seabird,” or, at best, gull or shearwater. Initiation at Southeast Fisheries Science Center (SEFSC) of a seabird bycatch project in 2004 with support from the National Seabird Program led to identification to species level of almost all seabirds caught thereafter, and several new species have been added to the seabird bycatch species list for this fishery. Annual and long-term estimates of the total seabird bycatch of the fleet are made from POP and logbook data in this Project. Substantial improvements in assessment and estimation methodology have been applied to the data by colleagues at Virginia Polytechnic University. Bycatch estimation has begun to include a close look at the three east coast statistical areas where seabird bycatch is concentrated. This focus has allowed greater opportunity to examine the main seabird community contributing to bycatch and its supporting ecosystem. The ocean there is major feeding habitat for an exceptionally diverse group of seabird species including boreal, temperal, and tropical nesters, some of which are rare species of concern both domestically and internationally.



Northern Gannet. Photo credit: Alan D. Wilson, Wikimedia Commons

FY16 Project objectives are to:

1. conduct seabird identification training classes
2. advance the science of estimating seabird bycatch
3. recalculate and update the time series of estimated total fleet catch from 1992 through the latest year of data
4. provide species-level bycatch estimates for the most abundant and consistently caught species, and
5. estimate probability of capture of rare seabird species—and probability of the event's detection.

### Development of Educational Video for Seabird Handling Techniques for Hawaii Longline Fishermen and NMFS Observers

Andrew Torres, Sarah Ellgen, Melanie Brown, and John Peschon, Pacific Islands Regional Office



NMFS observer and Black-footed Albatross. Photographer unknown

Project Background and Objectives: The Hawaii longline fisheries interact with seabirds, primarily North Pacific albatrosses. Albatrosses are large birds with a wide wingspan; their size and strength can make handling and hook removal challenging. Federal regulations require seabird mitigation practices and proper handling and release techniques. Seabird mitigation measures have greatly reduced seabird bycatch since they were implemented in the early 2000's. In 2015, for example, NMFS observers recorded just 132 birds caught in the deep-set fishery (20% coverage); of these, 19 seabirds were released injured and 113 were dead. In the shallow-set fishery (100% coverage), observers documented 81 birds caught (65 released injured and 16 dead).

[http://www.fpir.noaa.gov/SFD/pdfs/seabird/2015\\_PIR\\_Seabird\\_Report\\_Jan\\_2017.pdf](http://www.fpir.noaa.gov/SFD/pdfs/seabird/2015_PIR_Seabird_Report_Jan_2017.pdf).

The Pacific Islands Regional Office (PIRO) will help improve knowledge about seabird handling and release techniques for longline vessel owners, operators, and NMFS observers through the development of a 5-8 minute educational video. The educational video will include de-hooking and handling footage of past seabird interactions, and demonstrations and explanations by experts of proper de-hooking and safe handling procedures. The video will be incorporated in the required protected species training for

longline vessel owners and operators, as well as NMFS longline fisheries observers. The Sustainable Fisheries Division at PIRO will work with the PIRO Communications Program in developing content and producing the video, and collaborate with the USFWS on demonstrating best practices. This project will support the *Memorandum of Understanding on Migratory Bird Conservation between the USFWS and NMFS* by improving the knowledge of seabird handling and release techniques for entangled or injured birds to maximize the likelihood of survival of seabirds caught incidental to fishing operations and released alive.

### Streamer Line Distribution in Alaska Longline Fisheries

Anne Marie Eich and Brandee Gerke, Alaska Regional Office



Streamer lines on deck awaiting deployment. Photo credit: NOAA Fisheries, Alaska Region.

This project will provide fishermen with streamer lines to reduce the incidental mortality of seabirds in the hook-and-line fisheries off Alaska. Seabird avoidance measures, specifically streamer lines, reduce the incidental mortality of seabirds in the hook-and-line fisheries off Alaska by nearly 100% when properly deployed (see [research](#)). Streamer lines have been required for 12 years, since 2004 (see [history](#)). It is likely that the incidental mortality of seabirds in the hook-and-line fisheries off Alaska could be further reduced on many vessels with new streamer line gear. We will purchase up to 75 pairs of streamer lines to distribute at seabird avoidance outreach meetings in Alaska, primarily to halibut and sablefish Individual Fishing Quota (IFQ) vessel operators. Streamer lines will also be distributed to NMFS Law Enforcement Offices in Alaska that request streamer lines.

In Alaska, [seabird avoidance measures](#) are required to be used by operators of vessels > 26 ft length overall (LOA) using hook-and-line gear while fishing for 1) [IFQ](#) halibut, [CDQ](#) (Community Development Quota) halibut, or [IFQ](#) sablefish in the EEZ off Alaska or State of Alaska waters (0-200 nm combined) or 2) groundfish in the EEZ off Alaska (3 to 200 nm). Vessels > 55 ft LOA in the EEZ must use a minimum of a paired streamer line of a specified performance and material standard. Vessels > 26 ft LOA and ≤ 55 ft LOA must use a minimum of a single (if using snap gear) or paired (if using other than snap gear) streamer line of a specified performance and material standard. Limited exemptions from seabird avoidance regulations exist. Vessel operators using hook-and-line gear and fishing for groundfish in State of Alaska waters must refer to State regulations (see [5AAC 28.055](#)).

### Linking At-sea Conditions with the Coast-wide Cassin's Auklet Mass Mortality Event of 2014-2015: Understanding Effects of the Warm Blob on the California Current Ecosystem through a Seabird Indicator Species

Jeannette E. Zamon, Northwest Fisheries Science Center

During 2014-2015, the California Current Ecosystem experienced an unusually warm surface feature referred to as the Warm Blob. Surface temperatures 1-4° C above long-term averages caused major perturbations across all trophic levels, including an unprecedented, publicly-visible, coast-wide die-off of the Cassin's auklet (*Ptychoramphus aleuticus*). Necropsies indicated auklets were emaciated, implying these diving birds (dive range 3-43 m) were starving because they were unable to access zooplankton food sources. Coast-wide patterns of beach-cast birds are presently being analyzed. However, there has not yet been a focused effort to analyze at-sea auklet distribution and determine whether anomalies in the ocean distribution occurred and were correlated with Blob-induced changes to hydrography. The Northwest Fisheries Science Center (NWFSC) observed unusually high numbers of Cassin's auklets during annual surveys of the northern domain of the California Current, suggesting that survivors of the die-off may have moved northward during the period the Blob was present.



Cassin's Auklet - photo credit: Sophie Webb

The three objectives of this proposal are:

1. to compile NWFSC at-sea observations of Cassin's auklet within the California Current Ecosystem before (2003-2013), during (2014-2015), and after (2016) the manifestation of the Warm Blob,
2. to determine whether the ocean distribution of Cassin's auklet changed or remained the same after the onset of the Warm Blob, and
3. to examine the relationship between pycnocline parameters (depth, strength, surface layer temperatures) and auklet densities at sea before, during, and after the manifestation of the Warm Blob.

## National Seabird Program Funded Projects

To date, all inferences about the die-off come from shore-based observations of dead birds and necropsy data. Analysis of at-sea distributions and ocean conditions fills a data gap in our understanding of not only of the mass mortality event itself, but also of whether hydrographic conditions or changes in auklet distributions may provide early-warning indicators of severe disruptions to zooplankton at the base of the food web.

### Pacific Seabird Bycatch Necropsy Program

Shannon Fitzgerald, Alaska Fisheries Science Center; Michelle Hester, Oikonos; Chris Rilling, Alaska Fisheries Science Center; John Kelly, Pacific Islands Regional Office



Laysan Albatross. Photo credit: Charlotte Boyd

In this program, observers in Alaska, Hawaii, and US West Coast fisheries collect seabirds from the bycatch and other vessel interactions, with special focus on procellarids. Birds are forwarded to Oikonos, co-located with the Marine Wildlife Veterinary Care and Research Center, Santa Cruz, CA. This project has been going on for several years and makes important use of bycatch seabirds, providing a scientific collection that is incomparable to any we know of. Data can be used to refine estimates of the impacts of bycatch on populations, provide ecosystem modeling information, and monitor changes in the marine environment. Several items noted as high priority in the USFWS Laysan and Black-footed Albatross Conservation Action Plan can only be addressed through this project. Many of the results directly apply to collaborative work between NOAA Fisheries and the USFWS. This program has been in place since 2007 and represents a valuable time-series of seabird data in support of a variety of activities. To date, over 2,500 birds have been examined and another 250 are being processed in FY15.

Birds are necropsied and a broad suite of data collected. Additionally, the stomachs are examined for plastics and the natural food items were then shipped back to the AFSC for the food habits project.

#### Significance (with special focus or relevance to one or more of NOAA Fisheries' NSP focus areas and/or directives):

1. *Mitigation of Seabird Bycatch:* Although this project does not specifically address mitigation measures, the data can be used to understand population-level impacts by fisheries on populations or sub-populations and thereby help to target limited resources available for mitigation research.

2. *Promoting Seabirds as Ecosystem Indicators:* The data support population dynamics studies and the food habits information is especially

important for developing and improving marine web food habits studies.

3. *NMFS-USFWS Memorandum of Understanding on Migratory Bird Conservation:* The Alaska Fisheries Science Center (AFSC) has built collaboration and client service to the FWS since the 1970's, and especially through the High Seas Driftnet and the Groundfish observer programs. The high quality of training provided to observers was established through this cooperation, and the information derived from observer data serve the continued collaboration in many ways. Annual reports are provided to the FWS on total seabird bycatch estimates and the FWS provides input each year on their needs.

### Seabird Training for Alaska Groundfish Observers

Shannon Fitzgerald, Alaska Fisheries Science Center; Dr. Julia Parrish and Hillary Burgess, University of Washington Coastal Observation and Seabird Survey Team (COASST)

The USFWS and NOAA's Alaska Fisheries Science Center worked closely during the high seas driftnet program, 1989-1993 to provide seabird training to observers. Based on this collaboration, observer duties in the AFSC North Pacific Groundfish Observer Program were expanded to include seabird observation and bycatch monitoring. Fitzgerald of the AFSC and Dr. Patrick Gould of the USFWS worked together to develop supporting materials for observers, including species ID training. Species ID was especially important due to the rare bycatch of the endangered Short-tailed Albatross and was included as a requirement in the Biological Opinion.

## National Seabird Program Funded Projects

Seabird responsibilities for observers were implemented in 1993. NSP funds will be used to train observers through the Coastal Observation and Seabird Survey Program at the University of Washington trains observers. The goal is to achieve consistency and reliably provide seabird training, and to provide high quality training to more than 400 observers per season. Provision of this training allows for good reliability in the seabird data collected, especially where it concerns any bycatch events of the endangered Short-tailed Albatross. An added benefit of COASST's involvement is their ability, at no extra charge, to organize unpaid student interns to assist with other seabird studies such as data entry or preparation of specimens.

Significance (with special focus or relevance to one or more of NOAA Fisheries' NSP focus areas and/or directives):

- 1) *Mitigation of Seabird Bycatch:* In all mitigation work we do in Alaskan waters large sample sizes are necessary. The work often complements observers already deployed to the vessel or brought on board under a special contract. Also, it is important to review observer data catch rate information to better understand where the greatest conservation need is among the many commercial fishing sectors.
- 2) *Promoting Seabirds as Ecosystem Indicators:* North Pacific Groundfish and Halibut Observers collect a broad suite of bycatch and fishery interaction data and also collect birds for the necropsy program. Some of these results support seabirds as ecosystem indicators studies.
- 3) *NMFS-USFWS Memorandum of Understanding on Migratory Bird Conservation:* The AFSC has built collaboration and client service to the FWS since the 1970's, and especially through the High Seas Driftnet and the Groundfish observer programs. The high quality of training provided to observers was established through this cooperation, and the derived from observer data serve the continued collaboration in many ways. Annual reports are provided to the FWS on total seabird bycatch estimates and the FWS provides input each year on their needs.



Common Murres. Photo credit: Jeannette Zamon

## Other Accomplishments

### Northwest Fisheries Science Center

Outreach/Education – Worked in collaboration with academics to facilitate introduction to USA of unique methods of Haruo Uchiyama (Japan), who creates detailed, realistic woodcarvings of seabirds and other birds to teach blind students about ecology, evolution, adaptive radiation, bird conservation, and appreciation.

Jeannette Zamon

### Southwest Fisheries Science Center

Trevor Joyce becomes Dr. Trevor Joyce from Scripps Institution of Oceanography.

## 2016 NSP Team

Lisa T. Ballance – NSP Chair  
Karen Abrams  
Stuart (Joe) Arceneaux  
Lee Benaka  
Grace Bottitta  
Charlotte Boyd  
Samantha Brooke  
Joan Browder  
Melanie Brown  
Stephen Brown  
Jim Carretta  
Christa Colway  
Therese Conant  
Yvonne de Reynier  
Ron Dean  
Kevin Duffy  
Anne Marie Eich  
Sarah Ellgen  
Shannon Fitzgerald

Tom Good  
Tom Graham  
Sarah Gurtman  
Bob Harman  
Gretchen Harrington  
Jolie Harrison  
Joshua Hatch  
Annette Henry – NSP Coordinator  
Trevor Joyce  
Mi Ae Kim  
Jennifer Lee  
Kristin Mabry  
Marie-Caroline Martin  
Summer Martin  
Marti McCracken  
Zora McGinnis  
Jon McVeigh  
Kimberly Murray  
Stacey Nathanson

Derek Orner  
Debra Palka  
John Peschon  
Elizabeth Phillips  
Mark Renkawitz  
Alexis Rudd  
Ryan Shama  
Jeff Shenot  
Gina Shield  
Ryan Silva  
Michael Simpkins  
Mridula Srinivasan  
Andrew Torres  
Rachael Wadsworth  
Amilee Wilson  
Sadie Wright  
Stephani Zador  
Jen Zamon